

**REMARKS**

The Applicants respectfully request further examination and consideration in view of the arguments set forth fully below. Claims 1-12 were previously pending in this application. Within the previous Office Action, Claims 1-12 have been rejected. By the above amendments, Claims 1-3, 6-9 and 12 have been amended, and Claims 13-18 have been added. Accordingly, Claims 1-18 are currently pending.

**Rejections Under 35 U.S.C. § 112, Second Paragraph**

Within the previous Office Action, Claims 1-12 have been rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding Claims 1 and 7, it is stated within the previous Office Action that the term “hard” is a relative term that renders the claims indefinite.

Within the Advisory Action, the Examiner suggested overcoming the rejection by removing the term “hard” and/or reciting that the membrane is formed from the group consisting of diamond-like carbon, TiN, CrN, SiC, Al<sub>2</sub>O<sub>3</sub> and AlN.

By the above amendments, the term “hard” has been removed, thus the Claims are no longer indefinite.

**Rejections Under 35 U.S.C. § 103**

Within the previous Office Action, Claims 1-6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,755,426 to Kokai et al. (“hereinafter Kokai”) in view of U.S. Patent Application No. 2002/0114980 to Günsel et al. (“hereinafter Günsel”).

Kokai teaches a magnetic recording medium which comprises a substrate, a magnetic layer on the substrate and a protective layer which is formed directly on the magnetic layer or on an undercoat layer formed on the magnetic layer, the protective layer comprising a carbonaceous material essentially consisting of carbon, hydrogen and oxygen, which has improved traveling properties and abrasion resistance. [Kokai, Abstract] Further, Kokai teaches “when the ferromagnetic layer comprising cobalt is thermally treated in the presence of water to form a water-containing oxide of trivalent cobalt on the surface of the ferromagnetic layer before two protective layers are formed, durability of the magnetic recording medium is further increased.” [Kokai, col. 5, lines 59-64] As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer

12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] As recognized within the Office Action, Kokai does not teach using a protective layer on a magnetic sensor.

Gunsel teaches a magnetic recording medium and method for forming the magnetic recording medium. The magnetic recording medium includes a magnetic layer formed on a non-magnetic support, and a lubricant layer formed over the magnetic layer. The lubricant layer includes a compound selected from the group consisting of hydrocarbyl-substituted cyclopentanes, hydrocarbyl-substituted cyclopentenenes, hydrocarbyl-substituted cyclopentadienes, and mixtures or derivatives thereof and, optionally, one or more additives. The lubricant layer also may be used on a magnetic head for reading and writing information on a magnetic recording medium. [Gunsel, Abstract]

In contrast to the teachings of Kokai, Gunsel and their combination, the present invention is directed to a magnetic sensor. The magnetic sensor includes a substrate having a magnetism-sensitive element formed thereon, a membrane formed on the outermost surface, an organic film under the membrane to relieve the stress caused by the membrane and an inorganic film between the organic film and the magnetism-sensitive element to relieve the stress caused by the organic film. Also, an intermediate film formed from an element having a large force of bonding to carbon is able to be formed between the organic film and membrane.

Furthermore, the present invention includes an intermediate film formed between the organic film and membrane, and neither Kokai, Gunsel nor their combination teach an intermediate layer. As shown by the Figures 2-4, Kokai teaches a magnetic recording medium comprising a polyester film 1, a ferromagnetic metal thin layer 10, an intermediate layer 12 or a polymer protective layer 13 and an amorphous carbonaceous protective layer 11. [Kokai, Figures 2-4] At most there are four total layers utilized at once in Kokai. The present invention, in some embodiments, has a magnetic sensitive element, an organic film, an inorganic film, an intermediate film and a membrane, thus five layers. Hence, there is nothing in Kokai to correspond with the intermediate film of the present invention. [Present Specification, page 14, line 19 through page 15, line 2]

Moreover, the membrane of the present invention is formed from a film of amorphous carbon hydride containing C and H as the bases. [Present Specification, page 12, line 14] However, neither Kokai nor Gunsel teach a film of amorphous carbon hydride containing C and H as the bases.

Within the Advisory Action, the Examiner suggested limiting the inorganic film to a nitride film or an oxide of Si to exclude the oxide of the magnetic layer from reading on the term “inorganic film.”

By the above amendments, the term “inorganic film” has been replaced with “nitride film,” thus the Claims with this new limitation are allowable over Kokai and Günsel.

The independent Claim 1 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 1 has a nitride film formed on the magnetism-sensitive element, an organic film formed on the nitride film and a membrane formed on the organic film, wherein said magnetic sensor has said membrane disposed opposite to the medium, and relatively moves along said medium. As described above, the combination of Kokai and Günsel do not teach a nitride film. For at least these reasons, the independent Claim 1 is allowable over the teachings of Kokai, Günsel and their combination.

Claims 2-6 are dependent upon the independent Claim 1. As discussed above, the independent Claim 1 is allowable over the teachings of Kokai, Günsel and their combination. Accordingly, Claims 2-6 are all also allowable as being dependent upon an allowable base claim.

Within the previous Office Action, Claims 7-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kokai in view of Günsel and further in view of applicant's admissions.

Again, the Applicants have taken the Examiner's suggestion in the Advisory Action and have replaced the term “inorganic film” with “nitride film.”

The independent Claim 7 is directed to a position detector. The position detector of Claim 7 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, a nitride film formed on the magnetism-sensitive element, an organic film formed on the nitride film, and a membrane formed on the organic film, wherein said magnetic sensor has said membrane disposed opposite to the magnetic scale, and relatively moves along the magnetic scale to detect position signals provided on the magnetic scale. As described above, the combination of Kokai, Günsel and applicant's admissions do not teach a nitride film. For at least these reasons, the independent Claim 7 is allowable over the teachings of Kokai, Günsel, applicants' admissions and their combination.

Claims 8-12 are dependent upon the independent Claim 7. As discussed above, the independent Claim 7 is allowable over the teachings of Kokai, Günsel, applicants' admissions

and their combination. Accordingly, Claims 8-12 are all also allowable as being dependent upon an allowable base claim.

#### New Claims

The independent Claim 13 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 13 has an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film and an amorphous carbon hydride membrane formed on the organic film, wherein said magnetic sensor has said amorphous carbon hydride membrane disposed opposite to the medium, and moves relatively along said medium. As described above, Kokai, Gonsel and their combination do not teach an amorphous carbon hydride membrane formed on the organic film. For at least these reasons, the independent Claim 13 is allowable over the teachings of Kokai, Gonsel and their combination.

The independent Claim 14 is directed to a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon and which detects a magnetic signal from a medium having magnetic signals recorded thereon. The magnetic sensor of Claim 14 has an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, an intermediate film formed on the organic film and a membrane formed on the intermediate film, wherein said magnetic sensor has said membrane disposed opposite to the medium, and moves relatively along said medium. As described above and previously, Kokai, Gonsel and their combination do not teach an intermediate layer. For at least these reasons, the independent Claim 14 is allowable over the teachings of Kokai, Gonsel and their combination.

Claim 15 is dependent upon the independent Claim 14. As discussed above, the independent Claim 14 is allowable over the teachings of Kokai, Gonsel and their combination. Accordingly, Claim 15 is also allowable as being dependent upon an allowable base claim.

The independent Claim 16 is directed to a position detector. The position detector of Claim 16 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, and an amorphous carbon hydride membrane formed on the organic film, wherein said magnetic sensor has said amorphous carbon hydride membrane disposed opposite to the magnetic scale, and moves relatively along the magnetic scale to detect position signals provided

on the magnetic scale. As described above, Kokai, Gonsel and their combination do not teach an amorphous carbon hydride membrane formed on the organic film. For at least these reasons, the independent Claim 16 is allowable over the teachings of Kokai, Gonsel and their combination.

The independent Claim 17 is directed to a position detector. The position detector of Claim 17 comprises a magnetic scale with position signals longitudinally provided thereon and a magnetic sensor including a substrate having a magnetism-sensitive element formed thereon, an inorganic film formed on the magnetism-sensitive element, an organic film formed on the inorganic film, an intermediate film formed on the organic film and a membrane formed on the intermediate film, wherein said magnetic sensor has said membrane disposed opposite to the magnetic scale, and moves relatively along the magnetic scale to detect position signals provided on the magnetic scale. As described above and previously, Kokai, Gonsel and their combination do not teach an intermediate layer. For at least these reasons, the independent Claim 17 is allowable over the teachings of Kokai, Gonsel and their combination.

Claim 18 is dependent upon the independent Claim 17. As discussed above, the independent Claim 17 is allowable over the teachings of Kokai, Gonsel and their combination. Accordingly, Claim 18 is also allowable as being dependent upon an allowable base claim.

For the reasons given above, Applicants respectfully submit that all of the pending claims, Claims 1-18, are now in condition for allowance, and allowance at an early date would be greatly appreciated. Should the Examiner have any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,  
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Dated: June 21, 2006

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**CERTIFICATE OF MAILING (37 CFR § 1.8(a))**

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